

WHAT IS CLAIMED IS:

1. An electro-optical device, comprising:
 - data lines extending in a first direction above a substrate;
 - scanning lines extending in a second direction and intersecting the data lines;
 - pixel electrodes and thin-film transistors arrayed so as to correspond to intersection regions of the data lines and the scanning lines;
 - capacitors formed at a layer higher than a semiconductor layer of the thin-film transistors and at a layer lower than the pixel electrodes, and electrically connected to pixel potential; and
 - upper light shielding film positioned between the data lines and the pixel electrodes;
 - the upper light shielding film defining at least the corners of pixel opening regions;
 - and the scanning lines, the data lines, and the capacitors, being formed in the light shielded region.
2. The electro-optical device according to Claim 1, further comprising:
 - a relay layer having light-shielding capabilities, formed of the same film as the upper light shielding film, to electrically connect the thin-film transistors and the pixel electrodes, the shielding film and the relay film defining the pixel opening regions.
3. The electro-optical device according to Claim 2, the upper shielding film being electrically connected to one of the electrodes forming the capacitors.
4. The electro-optical device according to Claim 1, an inter-layer insulating film disposed as a base for the pixel electrodes;
 - and contact holds for electric contact with the pixel electrodes being formed on the inter-layer insulating film;
 - and a film including the titanium or a compound thereof being formed on at least the inner face of the contact holes.
5. The electro-optical device according to Claim 1, the data lines being formed of the same film with one electrode of the pair of electrodes making up the capacitors.
6. The electro-optical device according to Claim 1, further comprising:
 - a relay layer, to electrically connect at least one electrode of the pair of electrodes making up the accumulation capacitor with the pixel electrode.

7. The electro-optical device according to Claim 6, the relay layer being formed of an aluminum film and nitrided film.

8. The electro-optical device according to Claim 1, the scanning lines, the data lines, and at least one electrode of the pair of electrodes making up the capacitors, being formed of a light shielding material.

9. The electro-optical device according to Claim 1, one electrode of the pair of electrodes making up the capacitors making up a part of capacitor lines formed so as to follow the second direction;

and the capacitor lines being formed of a multi-layer film including a low-resistance film.

10. The electro-optical device according to Claim 9, the capacitor lines having the low-resistance film as an upper layer thereof and a film formed of a light-absorbing layer as a lower layer thereof.

11. The electro-optical device according to Claim 9, the low-resistance film being formed of aluminum or an aluminum alloy.

12. The electro-optical device according to Claim 1, the capacitors, comprising: the dielectric film and an upper electrode and lower electrode holding the dielectric film therebetween, and including a first portion layered following a plane parallel to the surface of the substrate, and a second portion layered following a plane rising from the surface of the substrate, thereby having a stepped cross-sectional shape which is higher at the middle than the portions closer to the edges.

13. The electro-optical device according to Claim 12, the stepped cross-sectional shape of the capacitors being formed following at least one of the scanning lines and the data lines.

14. The electro-optical device according to Claim 1, the capacitors, comprising: the dielectric film and an upper electrode and lower electrode holding the dielectric film therebetween, and the dielectric film being formed of a silicon nitride film and a silicon oxide film.

15. The electro-optical device according to Claim 1, an inter-layer insulating film disposed as a base for the pixel electrodes, further comprising:

a part of the layered structure;

and the surface of the inter-layer insulating film being subjected to smoothing processing.

16. The electro-optical device according to Claim 15, further comprising a shielding layer provided between the data line and the pixel electrode; the pixel electrodes including a first pixel electrode group for inversion driving at a first cycle and a second pixel electrode group for inversion driving at a second cycle complementary to the first cycle, with a plurality thereof being arrayed on a plane;

and at least one of the data lines and the shielding layer have a main line portion extending intersecting over the scanning lines and an overhanging portion overhanging from the main line portion following the scanning line;

and the electro-optical device further comprising a facing electrode on a facing substrate disposed facing the substrate, facing the plurality of pixel electrodes;

and protrusions being formed on the surface of the base of the pixel electrodes on the substrate, at regions which are gaps between adjacent pixel electrodes across the scanning lines when viewed in planar fashion, according to the presence of the overhanging portions.

17. The electro-optical device according to Claim 15, the pixel electrodes including a first pixel electrode group for inversion driving at a first cycle and a second pixel electrode group for inversion driving at a second cycle complementary to the first cycle, with a plurality thereof being arrayed on a plane;

and the electro-optical device further comprising:

a facing electrode on a facing substrate disposed facing the substrate, facing the plurality of pixel electrodes; and

protrusions formed at regions which are gaps between adjacent pixel electrodes when viewed in planar fashion;

and the protrusions being formed of protrusions with gradual surface steps, formed by etching back the surface of the protrusions exposed by removing a smoothed film temporarily formed on the protrusions.

18. The electro-optical device according to Claim 15, the pixel electrodes including a first pixel electrode group for inversion driving at a first cycle and a second pixel electrode group for inversion driving at a second cycle complementary to the first cycle, with a plurality thereof being arrayed on a plane;

and the electro-optical device further comprising:

a facing electrode on a facing substrate disposed facing the substrate, facing the plurality of pixel electrodes; and

a protrusion pattern formed below the pixel electrodes and of the same layer as at least one of the data lines and the shielding layer, in order to form protrusions at regions which are gaps between adjacent pixel electrodes when viewed in planar fashion.

19. An electro-optical device, comprising:
 - data lines extending in a first direction above a substrate;
 - scanning lines extending in a second direction and intersecting the data lines;
 - pixel electrodes and thin-film transistors arrayed so as to correspond to intersection regions of the data lines and the scanning lines;
 - capacitors formed at a layer higher than a semiconductor layer of the thin-film transistors and at a layer lower than the pixel electrodes, and electrically connected to pixel potential;
 - a shielding layer provided between the data lines and the pixel electrodes; and
 - a lower light shielding film formed at a layer lower than the semiconductor layer of the thin-film transistors;
 - the lower light shielding film defining at least the corners of pixel opening regions;
 - and the scanning lines, the data lines, the capacitors, and the shielding layer, being formed in the light shielded region.

20. The electro-optical device according to Claim 19, the shielding layer having light shielding capabilities.

21. An electronic apparatus, having an electro-optical device comprising:
 - data lines extending in a first direction above a substrate;
 - scanning lines extending in a second direction and intersecting the data lines;
 - pixel electrodes and thin-film transistors arrayed so as to correspond to intersection regions of the data lines and the scanning lines;
 - capacitors formed at a layer higher than a semiconductor layer of the thin-film transistors and at a layer lower than the pixel electrodes, and electrically connected to pixel potential; and
 - upper light shielding film positioned between the data lines and the pixel electrodes;
 - the upper light shielding film defining at least the corners of pixel opening regions;
 - and the scanning lines, the data lines, and the capacitors, being formed in the light shielded region.